Report of the Work of The Rubber Research Board in 1941.

(*Established under the Rubber Research Ordinance Chapter* 302).

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Report of the Work of The Rubber Research Board in 1941.

The present report is the Eleventh Annual Report of the Rubber Research Scheme (Ceylon) as constituted under the Rubber Research Ordinance (Chapter 302).

CHAIRMAN'S REPORT

Board Membership.—The three-year period of the following nominated members of the Board terminated during the year and appointments to fill the vacancies were made as indicated below:—

Mr. E. C. Villiers, M.S.C., 16th February. Renominated for a further period of three years.

Mr. L. P. Gapp, 1st April. Renominated for a further period of three years.

Mr. E. W. Whitelaw, 14th December. Renominated for a further period of three years.

The following additional changes in the membership of the Board occurred during the year:—

Mr. E. Rodrigo, C.C.S., resumed duties as Chairman of the Board on 25th February, relieving Mr. M. Crawford who had acted for him.

Mr. C. E. Jones, C.C.S., Deputy Financial Secretary, was deputed to represent the Financial Secretary from 19th February, in place of Mr. S. Phillipson, C.C.S.

Mr. J. C. Kelly was on leave from 3rd April, and Mr. J. A. S. Agar was nominated to act for him.

Mr. J. C. Kelly resigned and Mr. J. A. S. Agar was nominated in his place from 6th October.

The personnel of the Board at the end of 1941 was as follows:—

Ex-Officio Members.

The Director of Agriculture, Mr. E. Rodrigo, C.C.S., (Chairman).

Representing the Financial Secretary — The Deputy Financial Secretary (Mr. C. E. Jones, C.C.S.)

Unofficial Members of the State Council nominated by the Governor.

Mr. G. E. de Silva, M.S.C.

Mr. R. C. Kannangara, M.S.C.

Mr. E. C. Villiers, M.S.C.

Members nominated by the Ceylon Estates Proprietary Association.

Mr. L. P. Gapp.

Mr. J. A. S. Agar.

Members nominated by the Planters Association of Ceylon.

Mr. J. D. Farquharson.

Mr. F. H. Griffith, M.S.C.

Members nominated by the Rubber Growers' Association.

Mr. R. J. Hartley (Acting).

Mr. E. W. Whitelaw.

Members nominated by the Low-Country Products Association of Ceylon

Mr. T. Amarasuriya, M.M.C.

Mr. L. M. M. Dias.

Mr. T. C. A. de Soysa.

Mr. N. D. S. Silva, O.B.E., J.P.

Members nominated by the Governor to represent Smallholders.

Mr. W. P. H. Dias, J.P.

Mr. F. A. Obeyesekera.

Meetings.—Meetings of the Board were held at Dartonfield on 20th January, and in Colombo on 21st April, 21st July, 27th October and 8th December. The Board is again indebted to the Ceylon Chamber of Commerce for the use of its Committee room for meetings held in Colombo.

Committees.—

Experimental Committee.—There were no changes in the personnel of the Committee which, at the end of the year, was as follows :—

Mr. F. H. Griffith, M.S.C. (Chairman).

Mr. W. P. H. Dias, J.P.

Mr. R. C. Kannangara, M.S.C.

Mr. F. A. Obeyesekera.

The Director (Convenor).

Meetings of the Committee were held on 17th March, 23rd June, 29th September and 14th November.

Smallholdings Committee.—There were no changes in membership. The personnel of the Committee at the end of the year was as follows :—

Mr. W. P. H. Dias, J.P.

Mr. F. A. Obeyesekera.

The Smallholdings Propaganda Officer.

The Director (Chairman and Convenor).

A meeting of the Committee was held in Colombo on 10th January and further meetings at Horana, Galagedera, Galle and Ratnapura on 18th March, 3rd June, 12th September and 5th November respectively, in

conjunction with inspection of the work of the department in the respective ranges.

"Ad hoc" Committee.—A Committee consisting of Mr. C. E. Jones, C.C.S. (Deputy Financial Secretary), Mr. L. P. Gapp, Mr. F. A. Obeyesekera and Mr. T. E. H. O'Brien made recommendations to the Board on the terms of service of the junior staff.

London Advisory Committee for Rubber Research (Ceylon and Malaya).—The Board contributed jointly with the Rubber Research Institute of Malaya to the cost of research on the quality and utilisation of raw rubber carried out at the Imperial Institute, London, under the control of the London Advisory Committee for Rubber Research (Ceylon and Malaya). The Board's contribution during the year amounted to £875 which represents 25 per cent of the total cost of the work.

The arrangement to contribute to this work for a period of 5 years expired at the end of 1941. It was decided to continue to contribute at the same rate on an annual basis.

Meetings of the Advisory Committee and Technical Sub-Committee were held on 6th June and 26th September. A meeting of the Standardisation Sub-Committee was held on 17th October.

Employees' Provident Fund.—The Board resumed the administration of the Provident Fund owing to practical difficulties in its administration by Trustees.

FINANCE

Income.—The Board's main income was derived from the cess of 1/8 cent per pound levied on exports of rubber under Section 6 (1) (a) of the Rubber Research Ordinance. Income from this source was again in excess of the estimate owing to the increase in the permissible exportable amount under the Rubber Regulation Ordinance. Monthly cess collections were as follows :—

January	... ...	Rs. 25,811.26
February	... ...	„ 12,852.13
March	... ...	„ 14,703.22
April	... ...	„ 19,032.36
May	... ...	„ 19,761.59
June	... ...	„ 25,770.13
July	... ...	„ 25,873.97
August	... ...	„ 20,346.87
September	... ...	„ 19,257.23
October	... ...	„ 25,191.91
November	... ...	„ 17,616.92
December	... ...	„ 23,617.89
		Rs. 249,835.48

A profit of Rs. 29,199.51 was derived from the normal working of Dartonfield Estate and Rs. 7,164.31 from Nivitigalakele.

Expenditure.—Current expenditure amounted to Rs. 218,166.34, leaving a surplus for the year of Rs. 79,563.07.

Capital expenditure amounting to Rs. 28,073.46 was incurred mainly in respect of the following items:—

Junior staff bungalow at Dartonfield Rs. 4,478.76; Labourers' cottages Rs. 1,616.75; Kitchen hearths for line rooms Rs. 870.00; Dhoby house Rs. 1,830.91; Buildings at Nivitigalakele Rs. 1,047.42; Metalling and tarring approach road Rs. 5,200; Latex equipment Rs. 2,367.77; Agricultural development at Dartonfield Rs. 2,790 and at Nivitigalakele Rs. 5,829.55; Laboratory equipment Rs. 591.33.

Accounts.—The accounts of the Scheme have been audited by the Auditor-General and his report, together with a Balance Sheet and Statement of Income and Expenditure, are attached.

Technical Reports

The Director's report, which embodies the reports of the other officers, is attached. The report of the London Advisory Committee for Rubber Research (Ceylon and Malaya) will be submitted when available.

(Sgd.) E. RODRIGO,
Chairman of the Board,
Rubber Research Scheme (Ceylon).

21st March, 1942.

DIRECTOR'S REPORT FOR 1941.

In the report for 1940 it was stated that the war had not, up to the present, seriously disorganised the work of the Research Scheme. During the year under review three members of the research staff were absent on local military service for a substantial period every second month, and the Botanist and Mycologist was away from the Island on leave for the greater part of the year. The work of the Scheme was necessarily restricted under these conditions. Advisory visits to estates were reduced to a minimum and work was curtailed in other directions, but it was found possible to continue all the main field trials.

The prospects for 1942 are even less favourable. The Botanist and Mycologist has accepted a post in the Department of Agriculture; the Geneticist has left Ceylon on military service; the Soil Chemist has been mobilised for local military service; and the Chemist is engaged on special technical work for the Defence Authorities. It is hoped to maintain the

continuity of most of the field records but technical supervision will necessarily be reduced to a minimum.

The present report differs from those previously presented in that detailed departmental reports are not included. Time did not permit of such reports being prepared and, instead, the departmental officers have contributed summaries of their work for inclusion in the Director's report. It should however be noted that the progress of work is fully recorded in the quarterly reports which are compiled regularly for internal use.

Staff.

Director.—Mr. T. E. H. O'Brien was in charge of the work of the Scheme during the year.

Chemical Department.—Mr. M. W. Philpott, Chemist, was on duty during the year subject to periodical absences on military service.

Botanical Department.—Mr. R. K. S. Murray, Botanist and Mycologist, was absent on leave from April 10th to December 23rd.

Dr. C. E. Ford, Geneticist, was on duty during the year subject to absences on military service.

Mr. C. A. de Silva, Assistant Botanist, was on duty during the year

Soils Department.—Dr. L. A. Whelan, Soil Chemist, was on duty during the year subject to absences on military service.

Smallholdings Department.—Mr. W. I. Pieris, Smallholdings Propaganda Officer, was in charge of the department during the year.

Estate and Experiment Station.—Mr. G. P. N. de Silva, Estate Superintendent, was on duty during the year.

Junior Staff.

The Board adopted recommendations made by a Committee appointed to report on the terms of service of the junior staff. The general effect of the revised terms is to reduce the annual leave allowance slightly and to offer substantially improved financial prospects to the majority of the officers concerned, by the extension of incremental salary scales.

Buildings

One junior staff bungalow was constructed at Dartonfield.

CHEMICAL DEPARTMENT

Latex Shipment.—For several years it has been shown at Dartonfield that the preparation of latex for shipment is both practicable and profitable, but this form of manufacture has not yet been taken up by commercial producers.

During the year under review the Board decided to enlarge the scale of production at Dartonfield by installing a new creaming plant of considerably increased capacity. The plant is now in use, and the necessary quantities of latex for treatment are being purchased from

neighbouring estates. The Research Scheme does not usually engage in commercial undertakings but, in view of the lack of interest shown by local producers, the Board decided that a departure from normal policy was justified in this instance.

Investigations were undertaken in respect of alternative methods of preservation, creaming and packing. Information on the subject is available to producers on request, but the publication of a detailed report on this and other work of the department is not considered desirable under present circumstances.

Variability of Raw Rubber.—The records of monthly tests on Dartonfield crepe and smoked sheet were completed for a 2-year period. The comments made in the Annual Report for 1940, p. 34, on the first year's tests apply equally to the results obtained over the whole period. Seasonal variations were slight, the only apparent systematic changes being an increase in hardness and rate of vulcanisation towards the end of the year and a sudden fall in these properties during the period of refoliation.

No information exists showing clearly what proportion of the total variability of estate rubber is inherent in the latex and what proportion is due to differences in manufacturing procedure. An experiment designed to throw light on this question was carried out by interchanging latex between estates and factories. Four estates situated close to Dartonfield were included in the experiment so that each estate had four different latices to prepare and each latex was manufactured simultaneously at four factories. Interesting results were obtained from the experiment and also from preliminary smokehouse trials with different types of fuel.

Scorching Properties of Rubber.—Of much concern to the manufacturing technologists is the variable tendency of compounded rubbers to vulcanise prematurely (*i. e.*, to "scorch") while being processed. Scorching properties may be compared by heating specimens at a temperature corresponding to normal processing temperature and determining the time of heating required to produce a state of incipient vulcanisation. A procedure for making this determination, proposed by the London Advisory Committee, was utilised for tests on a series of sheet and crepe samples from 37 estates. Though there was a general and expected parallelism between the vulcanising properties and scorch values of the samples it was shown that the correlation was by no means complete.

Purified Rubber.—There is no progress to report in connection with the preparation of low water absorption rubbers.

Important discrepancies have been observed in determinations of water absorption capacity carried out on the same rubber in London and Ceylon. A critical study of the method used (B.S.I. Specification No. 902 —1940, Part 2 B3) was, therefore, undertaken and useful conclusions were reached regarding the effects of variations of procedure.

Rubber Coagulants.—Though arrivals of coagulants were somewhat irregular the total quantities imported during the year exceeded current requirements by a substantial margin. The retail prices of coagulants came under the control of the Controller of Prices during 1941, and importers were required to maintain reserve stocks which could not be drawn on except under licences issued by the Controller.

The sale of substitute coagulants fortunately decreased during the year under review but the occasional adulteration of acetic and formic acids by local dealers made it necessary to carry out a large number of analyses of suspected samples. A simple test for acetic acid was described in the *Third Quarterly Circular* for 1941, p. 99.

Vulcanised Products.—In order to reduce imports of pneumatic tyres the Research Scheme has for some time past advocated the expansion of the local tyre retreading industry. Most of the small firms now engaged in this trade in Ceylon started work under the Scheme's technical guidance. Requests for advice on the manufacture of tyre compounds and other minor vulcanised rubber articles were frequently received during the year.

Meteorological Observations

The summary of weather records for 1941 is shown below. The year 1941 was remarkable for the large number of rainy days occurring during the second-half of the year (151 out of 184).

	1941	1940
Rainfall (ins.)	...212.15	151.39
Highest monthly rainfall (ins.)	... 41.91 (May)	28.95 (October)
Highest daily rainfall (ins.)	... 9.11 (May 22nd)	7.14 (May 15th).
Highest shade temperature (day)	97.5° (March 14th)	92.9° (Feb. 11th).
Lowest temperature (night)	... 66.9° (Dec. 12th)	64.8° (Jan. 1st).
Number of rainy days	... 263	241.

BOTANICAL AND MYCOLOGICAL DEPARTMENT

Oidium Leaf Disease

The important effect of atmospheric temperature on the incidence of Oidium was again demonstrated in 1941. Both day and night temperatures in the low-country were exceptionally high during February and the first half of March, and the disease was almost absent during that period. Wet and cooler weather during the second half of March led to late wintering trees being affected. Reports from mid-country estates indicated that the attack was relatively light below an elevation of about 1,500 feet while above that level the usual extensive defoliation occurred. Sulphur dusting programmes were maintained on mid-country estates, but in the low-country the treatment was carried out on a reduced scale or omitted altogether.

34 estates in the Matale District, whose Superintendents had undertaken to search for trees showing resistance to Oidium, were circularised, but the enquiry has so far been quite unproductive. The problem is being tackled in another way by establishing a "museum" collection of clones at an elevation of about 1,500 feet on Keptigalla Estate, Matale. The first planting of 37 clones was completed during the N. E. Monsoon.

A small experiment was carried out to determine whether the addition of soda ash to sulphur causes any injury to the flowers, thus resulting in reduced set of seed. Such an effect might be of practical value in the wet zone in reducing the incidence of Phytophthora pod and leaf disease following successful control of Oidium by sulphur dusting. It was found that both sulphur and an 80-20 sulphur-soda ash mixture increased the set of seed by protecting the flowers from mildew, and no evidence of phytocidal action was found.

Phytophthora Diseases

The almost continuous wet weather from May to November resulted in increased incidence of the diseases caused by *Phytophthora palmivora*, viz. pod and leaf disease, canker, bark rot, dieback of terminal shoots of young plants. Similarly reports of Pink Disease in immature areas were more frequent than usual.

Root Diseases

There are no fresh developments to report under this heading. The number of specimens received at the laboratories was considerably less than in recent years, which might indicate either reduced incidence or improved acquaintance with the several fungi and the methods of control.

Planting Material

Stock-Scion Relationship.—An experiment to compare the growth (and later the yields) of 5 clones budded on stocks raised from 5 illegitimate seedling families was initiated in a replanted clearing on Dartonfield. The clones are five of the R.R.I. "500" series viz. 500, 501, 506, 514 and 520. The stock families are TJ. 1, AV. 163, B.D. 10, B.S. 3 and MK. 1/1 (also unselected seedlings). A block was also planted with unbudded seedlings of the same families. The first series of measurements made at six months old revealed slightly, but significantly, better growth on the stock families TJ. 1 and AV. 163. It is interesting to note that in an earlier study of comparative root development, seedlings of these two families showed greater mean weight of roots than seedlings of the other families included in this experiment.

Reference was made in the Annual Report for 1940 to an experiment in progress on Mukalana Estate to determine the effect of stock on scion. Trees of TJ. 16 and B.D. 5, budded at a height of 3 feet are tapped on 2S/2, d/4, 100%, one cut being on the scion and the other on the

stock. Correlation coefficients for the various pairs of varieties, *i.e.*, yield and girth of stock and scion, were calculated, and showed the expected significant positive total correlations. The coefficient of greatest interest is the partial correlation showing the relationship between yield of scion and yield of stock with the girths kept constant. This was found to be +.5209 (significant) for B.D. 5 and +.0823 (not significant) for TJ. 16. In other words, at the level of the tapping cut (20 in.—16 in. above the union) the yield of B.D. 5 is materially affected by the yield of the stock, whereas the yield of TJ. 16 is not so affected. Comparison of the yield of the stocks with that of a number of unbudded seedling trees scattered at random throughout the area suggests that TJ. 16 may have increased the yield of the stocks on which it was budded, but not so B.D. 5. The experiment is being continued.

The resumption of an experiment at Nivitigalakele with pairs of buddings and marcots confirms that the influence of yield of stock on yield of scion is unimportant when the latter is tapped on a high cut. (See Annual Report for 1938).

Studies on Clones and Seedling Families.—95 new clones were established from legitimate seedlings raised from the 1939 hand-pollination programme. The mother trees were selected from 187 seedlings on the basis of their reaction to the Testatex pricking test. All the seedlings were transplanted to the field as stumps.

Studies on clones, local and imported, were continued at Nivitigalakele, Wagolla, Iriyagama Division of the Experiment Station, Peradeniya, and on estates co-operating with the Scheme. 17 new clones developed from Ceylon mother trees were taken into tapping at Nivitigalakele during the year, also 114 clones derived from Prang Besar Isolation Garden seedlings. Some of the latter show great promise.

Records from the commercial tapping of budded areas on estates were collated and published in the *Quarterly Circular*. In general the yields may be regarded as satisfactory though in some instances the rate of increase in the second year of tapping is disappointing.

Tapping of seedling trees from the isolation seed gardens on Prang Besar Estate, Malaya, and Tjikadoe, Java, was continued at Nivitigalakele. The yields to-date are summarised in Table I.

TABLE I

Yields of Prang Besar and Tjikadoe Isolation Garden Seedlings
Tapping System S/2, d/2, 100%

Source of Material	Planted	No. of trees tapped in 1941	Average yield in lbs. per tree in tapping year		
			1st	2nd	3rd
P. B. I. G. Plot C	1935*	122	2·9	4·8	
P. B. I. G. Plot B (S. R. 9 selfed)	do	54	1·6	2·4	
Tjikadoe I. G.	1935**	112	2·2	4·3	7·0

* Seed planted in nursery in 1932, transplanted as stumps 1935
** Seed planted in nursery in 1931, transplanted as stumps 1935.

The figures for the Prang Besar I.G. seedlings are of special interest as this material has been planted on many estates in recent years and these are believed to be the only trees at present in tapping in Ceylon. The yields to-date are rather disappointing and hardly up to the standard of a good clone at the same age and girth. It should be noted, however, that 1941/42, which was the second tapping year for the P.B. seedlings and the third for the Tjikadoe seedlings, was a very unfavourable year for crop owing to incessant interference to tapping by rain. Both types of material were planted in the field as large stumps, having been unavoidably retained in the nursery for nearly 3 years (P.B.) and 4 years (Tjikadoe). The most promising families in the Prang Besar collection are P.B. 23, 24, 56 and 86.

Breeding.—An extensive programme of artificial pollinations was undertaken during the flowering season. The main programme aimed at securing 25 seedlings of each of 30 new families, the parents being mainly budded trees of high yielding Ceylon clones. As a subsidiary programme pollinations were made on clone BS. 3 (an exceptionally fertile seed parent) using pollen (a) from clones which, whilst not themselves outstanding in yield, were derived from high yielding parents, and (b) from clones which are likely to be included in future programmes.

A total of 14,271 pollinations was made of which 536 flowers (3.8 per cent) set seed. Unfortunately serious losses occurred later owing to storm damage and pod rot, and germination was also poor. The nett result is that only 443 seedlings were obtained.

Seed Gardens.—As a corollary to the breeding work, arrangements were made for the establishment of seed gardens on six estates for the production of seed of the crosses used in the hand-pollination programmes. These gardens were opened and planted, and one was budded with the selected clones.

Twinning.—An investigation of the effect of twinning on the growth of the resultant seedlings was started in 1940. In each of four illegitimate families a number of seedlings was twinned and about the same number left untwinned as controls. The seedlings were transferred to the field in baskets and planted in a random arrangement. Girth measurements made approximately one year after planting showed that the mean for all the normal seedlings was 2.7 inches, whereas for the twinned seedlings it was 2.1 inches. This represents a loss of approximately 22 per cent Further measurements will show whether this difference is maintained.

A comparison of twinning by the Ramaer and Gambar methods showed no significant difference as regards the success of the operation. The seedlings were planted in the nursery for observations on growth.

Cytogenetics.—A small experiment was undertaken to study the effects of treating newly germinated seedlings with colchicine, an alkaloid which has been successfully used to induce polyploidy in various plant species. The treatment was observed to cause characteristic swellings on

a number of the roots, but although it is probable that polyploid tissue was formed the normal appearance of the stem and leaves suggested that the growth was resumed from diploid tissue.

Tapping :—

Mature Seedling Trees.—The tapping experiment on mature seedling Rubber on Dartonfield completed its fourth year in February, 1941. The results were published in detail in the *Quarterly Circular* and are summarised in Table II.

The decrease in yield of system No. 1 (S/2, d/2, 100%), which was noted in 1939/40, persisted in 1940/41. Most of the other treatments, therefore, show a relatively high yield in proportion to their intensity of tapping. Attention was drawn in the 1940 report to the satisfactory results achieved with system No. 8 (2S/2, d/3, 133%), and in view of the urgent demand for maximum crops the adoption of this system has been recommended as a temporary expedient on estates in the wet low-country districts which have satisfactory bark reserves. No important differences are shown between any treatments in respect of percentage scrap, dry rubber content of the latex or rate of bark renewal, while the incidence of Brown Bast is positively related to the yield.

Young Budded Trees.—The results of the main tapping experiments with budded trees are given in Table III. This corresponds with Table IV in the report of the Botanist and Mycologist for 1940, but the yields are given for each tapping year. In experiment 4 the figures are combined for the three clones as there is no replication within each clone. Experiment 5 is of a different type to the others as the trees are test-tapped in single tree plots; in this area an approximate figure for yield per acre is calculated from the yield per tree and the known stand per acre.

The main interim conclusions to be drawn from these experiments are :—

(1). The loss of crop consequent on the reduction of the tapping intensity to 67 per cent varies according to the clone, being less with TJ. 1 and Glenshiel 1 than the other clones used in these experiments. There is no evidence of the relative yield on the less intense systems increasing with succeeding tapping years, and the loss of crop does not appear to be adequately offset by any compensating advantages in times when maximum yields are required. Of the two 67 per cent systems under comparison, tapping on a third spiral on alternate days (S/3, d/2) has consistently given a higher yield than tapping on a half-spiral every three days (S/2, d/3) especially in the first year though the latter would give cheaper tapping.

(2) Systems 4 (2S/2, d/4, 100%) and 5 (S/1, d 4, 100%) may be considered together as they give very similar results. In most cases the yield is slightly higher than System 1 (S/2, d/2, 100%), but the gain is mainly in the shape of off-grades resulting

TABLE II

Tapping Experiment (Dartonfield) Results 1940/41

	Tapping System	Percentage Yields (adjusted as regression on uniformity trial) 1937/38	1938/39	1939/40	1940/41	1937/41	Scrap (tree) as per cent of total	Mean D. R. C. per cent	Bark renewal in mms. (4 yrs.)	Percentage trees with Brown Bast in June, 1941
Sub-Block A Two/Four-Day Series	1. S/2, d/2, (2×6m/12), 100% ..	100·0	100·0	100·0	100·0	100·0	10·8	41.0	6·9	3·3
	2. S/2, d/2, (2×6m/12), 12m/18, 67% ...	70·8	74·0	86·6	85·7	77·9	10·8	40·5	6·9	1·7
	3. S/2, d/2. (2×2d/4), 100%	110·4	108·6	109·3	111·6	109·5	11·1	40 7	6·9	4·4
	4. 2S/4 d/2, (2×6m/12), 100%	85·0	94·5	102·8	113·2	97·6	8·5	40·9	7·0	3·9
	5. 2S/2, d/4, 100% ...	96·8	105·7	107·4	115·2	105·9	9·6	41·4	7·2	6·7
	6. 2S/2, d/4 12m/18, 67%	73·2	74·2	86·5	86·0	78·8	9·3	41·3	7·3	1·7
Sub-Block B Three-DaySeries	7. S/2, d/3, (2×6m/12), 67% ...	67·8	71·2	79·5	85·7	74·9	11·3	42·0	7·1	1·7
	8. 2S/2, d/3, 133% ..	112·3	111·6	123·4	122·9	116·9	10·9	41·3	7·3	7·8
	9. 2S/2, d/3, 6m/12, 67% ...	69·0	73·6	82·1	85·1	76·0	11·1	40·3	7·2	1·7
	10. 2S/2, d/3, 12m/18, 89%	75·8	77·6	94·7	85·8	82·8	11·9	40·7	7·2	2·8
	11. 2S/2, d/3, 8m/12, 89%	81·0	89·0	101·0	99·5	91·6	10·3	40·0	7·0	3·9
	Standard error	3·4	3·8	5·1	5·4	3·9				
	Significant difference (.05) *within* sub-blocks ...	9·5	10·6	14·4	15·1	10·7				
	Significant difference *between* sub-blocks ...	10·5	10·5	17·4	17·6	11·0				

Note.—The abbreviations for the several tapping systems are in accordance with the revised version of the International Standard Notation (See *Quarterly Circular* Vol. 17, Part 3, p. 239).

TABLE III

Tapping Experiments with Budded Trees. Yield in lb. per acre and percentage comparison with S/2, d/2, 100%

Expt. No.	Clone	Locality	Year budded or planted	Tapping commenced	Acres	Tapping year	1 S/2, d/2, 100% Yield p.a.	1 S/2, d/2, 100% Yield p.c.	2 S/3, d/2, 67% Yield p.a.	2 S/3, d/2, 67% Yield p.c.	3 S/2, d/3, 67% Yield p.a.	3 S/2, d/3, 67% Yield p.c.	4 2S/2, d/4, 100% Yield p.a.	4 2S/2, d/4, 100% Yield p.c.	5 S/1, d/4, 100% Yield p.a.	5 S/1, d/4, 100% Yield p.c.
1.	TJ. 1	Kalutara & Ratnapura	1931/32	Apl. 1939	35	1	538	100	480	89	436	81	544	101	535	99
						2	667	100	554	83	538	81	730	109	709	106
						3*	698	100	584	84	537	77	722	103	737	105
2	BD.5	Kalutara	1931/32	Apl. 1939	20½	1	438	100					430	98	446	102
						2	686	100					713	104	743	108
						3*	680	100					695	101	692	101
3.	TJ.16	Ratnapura	1931/32	Aug.1939	21	1	598	100					613	103	694	101
						2	683	100					688	101	688	101
4	TJ.1 AV.49 BD.5	Elpitiya	1931	Jan. 1939	14½	1	557	100	463	83	368	66				
						2	620	100	492	79	438	71				
						3	669	100	520	78	476	71				
5.	G.1 AV.256 PB. 256	Dartonfield	1934	Mar.1941	7½	1*	500	100	400	80	360	72	450	90		
						1*	290	100	220	76	200	69	300	103		
						1*	300	100	220	73	210	71	280	93		

* 10 months' tapping only

p.a. = lb. per acre.
p.c. = per cent of S/2, d/2, 100%

from late dripping. No conspicuous advantage in favour of the full spiral system, as found in Malaya, is revealed in these trials.

(3). The rate of girth increase varies inversely with the intensity of tapping, *i.e.*, it is higher with systems 2 and 3 than with systems 1, 4 and 5. Systems 4 and 5, however, adversely affect the increments to a greater extent than system 1, probably on account of the "ringing" effect. For this reason they are not recommended for the opening year of years of tapping on small trees.

(4). Bark renewal is satisfactory for all clones for all treatments, though it is faster with systems 3, 4 and 5 than with systems 1 and 2.

(5). In general the greatest incidence of Brown Bast is found in systems 4 and 5, but nowhere does the percentage of trees affected after 2½ years of tapping exceed 3 per cent (system 4, T.J. 1).

(6). While it is too early to draw any conclusions regarding the clones in Experiment 5, there appears to be justification for recommending the adoption of the S/2, d/2, 100% system for the clones in the other experiments, at least in the wetter districts where the intensity is reduced by loss of many tapping days in wet weather.

Bark Renewal.—In the report for 1940 reference was made to an experiment to determine whether the periodical application of certain vegetable oils to recently tapped cortex had a beneficial effect on renewal. The results were negative but it was subsequently found that the Palm Oil in use was not a typical commercial sample. The experiment was therefore recommenced with a new sample, but again there was no evidence of any treatment effect after six months. Probably the rate of renewal on Dartonfield is too rapid for the treatment to be of value, and interest is attached to other trials started recently on several estates.

Natural Covers.—Observations were continued in the mature area at Dartonfield which is allocated to a study of natural covers. After 5 years a fairly satisfactory general cover has been obtained in most portions, though the replacement of the woodier shrubs by more desirable species is still slow and grass gives a certain amount of trouble.

The regeneration of natural covers in the clearings at Nivitigalakele opened in 1940 and 1941 without a burn is very satisfactory, and interesting changes in plant associations are at present occurring under the new environmental conditions. From a practical standpoint the method of clearing without a burn has involved no major drawbacks, and growth of the young Rubber is excellent.

Replanting

Wind Damage.—In view of the general concern over wind damage in immature areas caused in the S.W. monsoons in 1940 and 1941, a questionnaire was sent to estates and fully representative data obtained.

The replies show that although the loss of young trees and damage thereto are sometimes heavy in localised areas the situation, viewed as a whole, gives no cause for undue apprehension. The somewhat unexpected deduction was made that young "clonal" seedling trees are no more resistant to major damage than buddings, though variation may be expected with different families as with different clones.

Replanting Experiment No. 3 (1936).—One of the objects of this experiment is the comparison of three methods of establishing a stand of buddings in the field. The girth measurements of the three treatments for 1940 and 1941 are given in Table IV. The initial advantage of the stumped buddings over the budded stumps and of the budded stumps over the plants budded in the field is maintained, and in neither case is there any indication of the leeway being reduced. At the present rate of girth increase the stumped buddings will be tappable about 8 months earlier than the budded stumps, and the latter about 16 months earlier than the plants budded in the field.

TABLE IV
Mean Girth Measurements in Inches

	1940 (4 years)	1941 (5 years)	Increment 1940-41
Stumped Buddings	15·33	19·04	3·71
Budded Stumps	12·77	16·56	3·79
Field Buddings	7·91	11·65	37·4

SOILS DEPARTMENT

As in previous years the Assistant Botanist has continued to supervise field trials laid down at Dartonfield and Nivitigalakele before the Soils Department was formed.

Manuring

1. **Mature Rubber**

(a) *General Recommendations.*

General recommendations for manuring mature Rubber remain unchanged but modifications have had to be made in the composition of mixtures from time to time according to prices and supplies available

The present general wartime recommendation is a biennial application consisting alternately of 850 lbs. groundnut cake, and the mixture 850 lbs. groundnut cake, 40 lbs. saphos phosphate and 20 lbs. muriate of potash. These manures must be forked into the soil, preferably by deep envelope forking between the rows of trees. Bone meal may be preferable to mineral phosphate on soils of an alkaline reaction; wood ash from smokehouses may be used as a substitute for muriate of potash. (A sample from Dartonfield showed a K_2O content of 5.8 per cent.)

(b) *Experiment on Dartonfield.*

The sixth year of this experiment was completed at the end of 1941 but results for the year are not yet available. Results for 1940, up to

which time 3 annual doses of experimental manures had been given, were reported in *The Quarterly Circular;* a summary of yield data is given in Table I below.

The mean yields for 1939 and 1940 are lower than those for the earlier years of the experiment. This may largely be ascribed to the decrease in the number of tappings brought about by the unfavourable weather conditions.

The manured plots N, NK and NPK all showed in 1937, 1938 and 1940 a significant increase (odds of 19 to 1) over the unmanured plots.

A comparison of two methods of applying the manure, broadcasting and forking, gave no indication of any difference in yield. Growth of the trees, bark renewal and dry rubber content of the latex were not affected by the treatments.

In 1942 yields will be recorded on the basis of a single monthly sampling instead of daily recording, since a high coefficient of correlation has been found between the annual yield obtained from the complete records and the calculated yield obtained by taking into account only one tapping per month. This will simplify the calculations and release the conductor in charge of the trial for part-time attention to other experiments.

TABLE 1

Mean Yield in Kilograms Dry Rubber per Plot of 20 Trees.

(To convert to pounds per acre the figures below should be multiplied by 11.)

Treatment	Preliminary year (1936) Actual yields	Adjusted* Yields (1937)	Adjusted* Yields (1938)	Adjusted* Yields (1939)	Adjusted* Yields (1940)
N	53.4	49.8 (111)	56.9 (114)	44.5 (112)	44.6 (111)
NP	52.3	47.5 (106)	52.9 (106)	41.5 (104)	42.0 (104)
NK	55.5	49.1 (110)	56.5 (113)	44.1 (111)	44.6 (111)
NPK	56.5	49.6 (111)	59.3 (119)	46.6 (117)	47.4 (118)
O	47.1	44.8 (100)	50.0 (100)	39.7 (100)	40.3 (100)
Mean	53.0	48.2	55.1	43.3	43.8
Std. Error		1.2	1.8		1.5
Significant Difference (odds 19:1)		3.5	5.3	Not Significant	4.3

* Adjusted by means of a regression on the preliminary figures for 1936.
(figures in brackets represent the yields as percentages of the unmanured plots.)

(c) *Experiments on Estates.*

It was decided that fertiliser trials, similar in type to the one at Dartonfield but of improved design, should be undertaken on 3 commercial estates (one each in Kurunegala, Kelani Valley and Kalutara districts). Six estates were visited in a preliminary survey of suitable centres but the proposal has been shelved for the present.

2. **Immature Rubber.**

(a) *General Recommendations.*

An alteration, based on data accumulated by the Research Scheme, has been made during the year in the general programme of manuring for young Rubber. Applications of phosphate alone are advised in areas where the general standard of growth is satisfactory, but for backward areas a general mixture should be given. In order to simplify the problem of wartime manuring one general mixture is now recommended in place of the former B, C and D mixtures.

General Mixture (Wartime substitute).

Groundnut cake	...	...	14 parts
Rock phosphate	...	...	5 „
Muriate of potash	...	...	1 part

Detailed suggestions for the manuring of young clearings will be found in Advisory Circular No. 2 (revised October, 1941).

(b) *Dartonfield Replanted Area No. 2 (19½ acres).*

This area was replanted in 1938 and laid out as a fertiliser trial There are six replications each planted with a different clone. Girth measurements were made in June, 1941, and a summary is given in Table II below.

TABLE II

Mean Girth in Inches per Plant.

Treatment	1940	1941	Increment 1940—1941
O	4.45	7.06	2.61
N	4.14	6.84	2.70
P	4.41	7.48	3.07
K	4.47	7.00	2.53
NP	4.47	7.90	3.43
NK	4.55	7.56	3.01
PK	4.64	8.08	3.44
NPK	4.80	7.84	3.04
Compost	4.68	8.17	3.49
Standard Error	Not	.310	.198
Sig. Difference	significant	Odds of 19 : 1=.90	Odds of 19 : 1=.57 Odds of 99 : 1=.77

The girth figures for 1941 show responses to manuring statistically significant at the lower (5 per cent) level of probability for PK and Compost.

The increments for the year 1940-41 show responses statistically highly significant (1 per cent probability level) for the treatments NP, PK and Compost.

If the above figures for 1941 are examined by the factorial technique and the compost figure omitted the following results are obtained :—

Mean Girth in Inches per Plant.

	Without N	With N	Without P	With P	Without K	With K
	7.41	7.54	7.12	7.83	7.32	7.62
Increments due to manure	.13		.71		.30	
Standard Error	Not		.141		Not	
Significant Difference	Signifi-cant		Odds of 99 : 1 = .55		Signifi-cant	

The results provide evidence, statistically highly significant of a girth response to phosphate but no evidence of a response to nitrogen or potash.

(c) *Dartonfield Replanted Area No. 3 (9½ acres).*

This experiment, started in 1936, compares 3 methods of opening, 3 methods of planting, and 2 types of manure.

Girth measurements were made in June at the age of 5 years. A discussion of the results dealing with methods of planting will be found in the report of the Botanical Department; a summary dealing with methods of opening and kinds of manure is given in Table III below.

TABLE III

Mean Girth in Inches per Plant.

		1940	1941	Increment 1940—1941
Opening				
(1) Platforms	...	12.46	16.33	3.87
(2) Trenches	...	12.17	15.81	3.64
(3) Pitted drains	...	11.39	15.11	3.72
Manuring				
(1) Organic	...	11.92	15.67	3.75
(2) Inorganic	...	12.10	15.83	3.73

(Results are not statistically significant.)

There is as yet no sound evidence that better growth has resulted from the platform and trench methods of opening and this, taken in conjunction with the greater costs of the methods and the tendency to root exposure, does not justify the use of such elaborate methods of opening on this area.

There is no difference in girth between plants given an organic and those given an inorganic manure.

(d) *Dartonfield Replanted Area No. 4 (2 acres).*

This area was planted in May, 1939, with 25 tree plots of miscellaneous clones, and was utilised for a small experiment to compare a soluble

readily available manure with one less readily available. Starting in September, 1939, applications were made at two monthly intervals of animal meal and a corresponding quantity of nitrate of soda, superphosphate and muriate of potash. A third treatment included small amounts of certain "minor elements" in addition to the inorganic mixture.

As girth measurements showed a substantial response to both inorganic and organic manures but no response to the treatment including additional quantities of minor elements, this latter treatment was altered in September, 1940, to one consisting of inorganic manures only at double the standard dose. At the same time the frequency of manuring was changed from two monthly to six monthly. Girth measurements taken in June, 1942, are summarised in Table IV below :—

TABLE IV

Mean Girth per Plant in Inches (3 feet above ground level.)

Block	Clone	Control	Inorganics	Double Inorganics	Organic	Mean
1	AV. 163	6.13	7.21	6.83	7.42	6.90
2	BR. 2	6.20	5.53	3.79	6.65	5.54
3	TK. 26	4.52	4.68	4.54	3.67	4.35
4	TK. 12	3.75	6.54	5.10	6.48	5.47
5	PB. 5/60	6.88	8.65	9.94	10.08	8.89
6	PB. 6/9	7.35	12.52	10.50	11.69	10.52
7	PB. 5/39	7.19	8.85	8.92	9.00	8.49
Mean		6.00	7.71	7.09	7.86	
			Standard Error	.4079		
			Significant Difference (odds of 19:1)		1.21	

The organic and inorganic figures show a significant increase over the control. The smaller increment for the double inorganic falls just short of the conventional standard of significance. This may be due to a depressing effect of the original minor element treatment which was discontinued in 1940, but there are indications that the growth of these trees is catching up on that of the trees in the organic and single inorganic plots. Soil conditions vary considerably between the different blocks and too much emphasis should not be placed on the apparent differences between clones.

(e) *Nivitigalakele 1935 Clearing (28 acres).*

In this experiment compost purchased from an Urban Council is compared with an inorganic manure mixture of the same NPK content. The area was planted with budded stumps in 1935, and experimental manuring started in 1937. In 1941 a final six-monthly application of manure was made early in October and the experiment will be discontinued in 1942. Thirty-two pounds of sieved compost (containing 2.3 ozs. N, 1.8 ozs. P_2O_5 1.1 ozs. $\frac{1}{3}K_2O$) or an equivalent quantity of artificial manure mixture was applied per tree.

Girth measurements were taken in January, 1942, and no significant difference was found between trees given compost (19.4 ins.) and those given the inorganic mixture (19.3 ins.)

(f) *Application of Manures to the Planting Hole. Nivitigalakele 1939 Clearing (10 acres).*

The treatments are Control, P, K and PK. The basic rates were 2 ozs. muriate of potash and 3.5 ozs. Saphos phosphate per hole. Planting with budded stumps was carried out in June, 1939, just after application of the manure. Subsequent general manuring was carried out as for estate routine. Girth measurements were taken by the Botanical Department in June and a summary is given in Table V.

TABLE V

Mean Girth in Inches per Plant (3 ft. above ground level.)

Control	P.	K.	PK.
3.69	3.97	3.69	4.02

Treated factorially :

Without P.	With P.	Without K.	With K.
3.69	4.00	3.83	3.86

Standard Error .0716

Significant Difference (odds 19:1) .22

The addition of phosphate has resulted in better growth but no advantage has resulted from the use of potash.

(g) *Deniya Experiment Nivitigalakele (2 acres).*

This area of sandy "deniya" was planted in September, 1940, with seedlings in baskets, and laid out for a comparison of 9 manurial treatments. In addition each plot was further divided for a liming treatment Since the start of the experiment graduated applications of manure have been made at three monthly intervals.

Girth measurements were made in January, 1942, and a summary is given below :—

Mean Girth in Inches per Plant.

O	N	P	K	NP	NK	PK	NPK	Compost
1.66 in.	1.70	1.84	1.44	2.01	1.56	1.72	2.06	2.27

None of the treatments is statistically significant. The above results were examined by the factorial technique, compost being omitted.

No nitrogen	With nitrogen	No phosphate	With phosphate	No potash	With potash
1.67	1.83	1.59	1.91	1.80	1.70

Increment

Over 0 .16 .32 -.10

Significant difference (odds 19:1) .26

Mean of all plants without lime 1.86 in.

,, ,, ,, ,, with lime 1.75

Phosphate shows a significant response at the lower (5%) level of probability. There is no response to nitrogen, potash or lime.

3. **Experiments in Immature Rubber on Estates.**

(a) *Planting Hole Experiments.*

Experiments were laid out on two estates in the Kalutara district, using the single tree plot technique, as follows:—

(1) *Comparison of Organic and Inorganic Manures.*

Height measurements made 8 months from time of planting budded stumps showed a small significant response to inorganic manure on one estate; on the other estate there was no response to the treatments.

(2) *Comparison of Refilling Holes with Sub-Soil and Surface Soil respectively, crossed with different Manuring Treatments.*

Height measurements made as above showed no effect on growth of the two methods of filling the holes, on either estate. On one estate there was a substantial response to organic manures (cowdung, compost, green manure) and a smaller response to inorganic manure On the other estate there was little, if any, response to the treatments.

The experiments will be discussed in greater detail in the next year's report.

(b) *Manuring Experiments on Young Budded Rubber.*

In 1938 a number of experiments were started in different districts. They are mostly of a simple randomised block design with 8 treatments of N, P and K at 2 levels (0 and 1) and with 4 replications. Details of manuring were given in the report of the Soils Department for 1940. This year's girth measurements of experiments still in progress have been summarised and are given in Table VI. (The series numbers used for the 1940 and 1941 reports refer to the same experiments).

TABLE VI

Mean Girth in Inches per Plant (1941)

Series No.	Time since planting (yrs.)	O	N	P	K	NP	NK	PK	NPK	Significant Difference
1	3½*	—	8.4	—	—	9.5	—	—	11.0	1.0 (odds 19:1)
2	3¾	9.3	9.6	10.0	9.4	9.4	9.3	9.2	8.9	
4	5	17.3	18.6	18.2	18.4	18.5	18.5	17.7	18.2	.66 (odds 19:1)
5	3½*	11.0	11.4	11.4	10.2	12.0	9.3	10.0	10.9	
6	4½*	13.3	13.4	14.8	13.5	13.8	13.7	13.7	14.6	.99 (odds 19:1)
7	5	14.4	14.9	15.3	14.9	15.8	15.3	15.5	16.2	1.19 (odds 19:1)
Mean excluding No. 1	4 1/3	13.1	13.6	13.9	13.3	13.9	13.2	13.2	13.8	1.63 (odds 99:1)

* Budded in field (age measured from time of budding.)

The mean values given in the last line of the table have not been statistically examined but they give an indication of a small general response to manuring and a slight superiority of phosphate to the other plant nutrients investigated.

4. **General Conclusions on Manuring of Young Rubber.**

As mentioned in the Report for 1940, experiments on Dartonfield and on estates give little evidence of any response to nitrogen and at only one centre is there evidence of satisfactory response to potash. There are indications that the addition of manures to the planting hole and the application of small amounts of phosphate after planting have resulted in increased growth of young trees on some areas. In view of this it has been decided to modify our general programme of manuring for young Rubber on the lines briefly indicated in Section 2(a) of this Report.

5. **Seedling Nursery Plants.**

(Details of manuring of experiments (a) and (b) will be found in the 1940 Report).

(a) *Effect of Nitrogen, Phosphate and Potash.*

A nursery experiment was laid down in February, 1940, and applications of manures were made every second month. The diameter of each plant was measured at one inch above ground level in August, 1941, and a summary is given below :—

O	N_1	N_2	P	K	N_1P	N_2P	N_1K	N_2K	PK	N_1PK	N_2PK
96 in.	1.06	1.03	1.02	.88	1.07	1.13	.99	.95	.91	1.05	1.08

By the factorial method the following results are obtained :—

No nitrogen	Single nitrogen	Double nitrogen	No phosphate	With phosphate	No potash	With potash
.94 in.	1.04	1.05	.98	1.04	1.04	.98

The results have not been examined statistically.

All plants over 1¼ inches in diameter were budded under controlled conditions, but there was no evidence that the number of successes was influenced by the manurial treatments. The plants were also divided into two groups according to diameter and the budding successes were counted for each group with the following results :—

	No. budded	No. successes	per cent successes
(A) Diameter 1¼-1½ in.	317	267	84.2
(B) Diameter over 1½ in.	252	245	97.2

It would appear from these figures that a diameter somewhat greater than 1½ in. is desirable for a high percentage of budding successes.

(b) *Effects of Different Forms of Nitrogenous Manures.*

In this experiment the plants were given a basal dressing of phosphoric acid and potash, and the following nitrogenous manures were used :

sulphate of ammonia, nitrate of soda (single and double dose), calcium cyanamide and blood meal. A summary of diameter measurements made at the age of 18 months is given below :—

No. Nitrogen	Nitrate of soda (single dose)	Nitrate of soda (double dose)	Calcium cyanamide	Blood meal	Sulphate of ammonia
.97 in	1.03	.96	1.05	1.13	1.10
	Standard Error			.039	
	Significant Difference (odds 19:1)		.11		

Plants given sulphate of ammonia or blood meal show a small but significant response. It is of interest to note the lack of response to nitrate of soda.

(c) *Effect of Cow manure and Rock phosphate.*

An experiment has recently been started to study the effects of applying rock phosphate and cowdung to nursery beds before planting. Height measurements of seedling plants were made 4 months after planting and a summary is given below :—

No. manure	Cow manure	Phosphate	Cow manure + phosphate
18. 6 in.	22.6	20.9	23.2
Standard Error		.796	
Significant Difference		odds 19:1 2.1	
		odds 99:1 2.3	

The dung and dung + phosphate treatments show a highly significant response and the phosphate treatment a response significant at the lower level of probability.

Soil Survey

During the year 4 profiles were examined on clearings and 20 soil samples were taken from them for analysis.

Laboratory Work

15 soil samples were examined for experimental and 66 for advisory purposes. The following were also analysed : lime 2, rubber leaves 25, compost 7, fish manure 2 and wood ash 1.

SMALLHOLDINGS DEPARTMENT

The year has been a profitable one for Smallholders in common with other Rubber Producers. It is unfortunate, however, that maximum crops could not be harvested in most districts owing to unusually wet weather from April onward, which interfered seriously with tapping. The value of coupons dropped to a fraction of a cent towards the end of the year.

Staff.—An extra Rubber Instructor, Mr. R. D. Robert, was appointed in March, and took up duties at Eheliya in May after the necessary course of training, making a total of seven Instructors. The headquarters of the Ruwanwella Instructor was transferred to Avissawella.

Visits, Meetings, Etc.—Supervisory visits were paid to each of the seven ranges on an average once a quarter or more often as necessary Petrol rationing affected the scope of travelling in December. The Horana, Kandy, Galle and Ratnapura ranges were inspected by the Smallholdings Committee who reported satisfactorily concerning the work seen in each. A meeting of the Committee was held at each of these ranges and also at Colombo.

Co-operative Work.—A scheme for the formation of Co-operative Rubber Producers' Societies was arranged in collaboration with the Co-operative Department. It has been agreed that the Research Scheme shall advance funds on easy terms to one such Society as a trial, to provide a small factory in which the members' latex will be manufactured into smoked sheet, under the general supervision of the local Rubber Instructor. The rubber will be transported by the Society direct to Colombo, sold through an approved broker, and the nett profits divided among the members on a *pro rata* basis. Losses presently sustained through middlemen, poor quality of smallholders' sheet and the use of inferior acid will be saved. The cost of preparing 4,500 lbs. of sheet per month co-operatively in this way shows a saving of about Rs. 150 per month over existing methods on an uncouponed rubber market of 30 cents per lb. Detailed estimates of buildings and equipment were prepared and financial implications of the Scheme worked out and explained to smallholders. A proposed Society at Peragashandiya had to be abandoned for want of support but steps are being taken towards the formation of a Society in another area.

A private co-operative enterprise on similar lines was started at Pilanduwa and buildings were constructed and equipment purchased. In this case the required capital was subscribed by members.

Marketing.

(a) *Coagulants.*—Owing to the difficulty experienced by small proprietors of obtaining supplies of good acid at normal prices a scheme was implemented whereby approved dealers were appointed at various provincial centres, who undertook to retail guaranteed acetic acid in sealed bottles supplied by approved suppliers at fixed prices which allowed a reasonable profit to the dealer. 12 such dealers were appointed and the scheme has proved a boon to smallholders within its limited scope. Messrs. Hunter & Co., and the Commissioner for Agricultural Marketing act as suppliers. The acid supplied is guaranteed to be 99 per cent pure and the bottles bear a distinctive label. Smallholders are directed to the appointed agents by Rubber Instructors as well as by a leaflet issued to every Rubber smallholder through the Rubber Controller, which explained the acid situation. A simple test for ascertaining the purity of acetic acid was published in the press and widely used by Instructors to test dealers' and smallholders' acid. About 50 per cent of the samples tested were found to be below strength. Acid was rationed by Government during the latter part of the year.

(b) *Rubber.*—The appointment of approved agents for purchasing smallholders' rubber was started with the co-operation of the Marketing Department. The agent buys the rubber according to grade and pays 75 per cent of the prevailing market value in cash. The balance is paid after sale in Colombo through approved brokers and deduction of the agent's commission (2 per cent), brokerage and actual handling charges. Although a start in selecting agents was made the scheme will not be put into actual practice till early 1941. The funds necessary for financing a trial agent for one year were voted by the Board.

Propaganda and Advisory Work.—Lectures were given in Sinhalese to assemblies of Rubber smallholders on six occasions. The audience on these occasions varied from about 2,000 to about 75. The Department participated in four agricultural shows or exhibitions at different centres and displayed exhibits of interest to Rubber growers. A total of 133 sheet making, 56 budding, 128 tapping, 105 disease treatment and 289 other demonstrations was given by Rubber Instructors to smallholders. 15 new demonstration nurseries and 25 demonstration compost pits were opened by the Department for giving instruction in budding and compost making. 6 nurseries and 69 compost pits were also opened by private owners. Extensive advisory work was carried out by means of visits, issues of the Department's leaflets and written advice. The inward correspondence was 1,655 and outward 1,417.

Replanting.—Owing to the need for maximum production of rubber the policy regarding replanting was not to recommend replanting to smallholders except where their trees were in a very poor condition. Lining for contour drains or holes was done by Instructors on 116 replanting holdings (175 acres) and planting was completed on 125 holdings (206 acres). Other replanting operations were carried out under Instructors' supervision on 149 holdings (265 acres). Lists of permit holders were obtained from the Rubber Controller, and the holdings visited by Rubber Instructors and advice given. Instructions were also given for planting food crops on young replanted areas.

A ½-acre demonstration replanted block was opened at Warakapola on the main Kandy road for the new Kegalle range and planted with budded stumps of Glenshiel 1 on December 17th. A demonstration block for the Ruwanwella range was selected in place of the block abandoned last year. The six blocks in other ranges were satisfactorily maintained and their average girth at 3 feet was as follows. The policy of manuring once each year with compost only was continued.

A competition for the "best replanted smallholding" was held in each of the Kandy, Galle, Matugama, Horana and Avissawella ranges. Judging in the first 3 ranges was concluded. The general standard of work and the growth on practically every holding judged were very satisfactory. Prize-givings were held in respect of the Galle competition and the previous year's competition in the Kandy range, at which talks and

demonstrations were given. A competition for the "best-kept holding" was held in the Ratnapura range where replanted holdings were few.

Block	Plants & Clone	Age	Average girth per plant	
Horana (Kahatapitiya)	74 of Tj. 1	4 years	10·69″	(7·21″)
Horana (Ratmalgoda)	115 of PB. 25	4 ,,	8·50″	(5·74″)
Matugama	52 of Gls. 1 20 of BD. 5	3½ ,,	8·77″	(6·33″)
Galle	80 of PB. 86	3 ,,	10·47″	(6·50″)
Kandy	87 of PB. 25	3 ,,	8·25″	(5·05″)
Ratnapura	79 of Tj. 1	3 ,,	9·00″	(6·83″)

Figures in brackets indicate girth 12 months ago.

Planting Material and Other Issues.—A total of 4,491 budded stumps, 1,484 yards of budwood and 145 stumped buddings were sold to smallholders. Approximately 127 sq. ft. of monel mesh was sold at reduced rates to popularise the use of this material. Owing to the prohibitive cost of metal utensils, 75 wooden latex pans and 50 wooden sieves were ordered @ Rs. 1.25 and 40 cents each respectively for free issue to small holders who carry out instructions given by the Department.

Sheet Making and Smokehouses.—By means of demonstrations and propaganda full use was made of the improved rubber market to get smallholders to make better sheet. There was a satisfactory demand for the cheap smokehouses designed and recommended by the Department. 104 smokehouses were started by private owners and 65 completed. 15 additional demonstration smokehouses were put up by the Department. 29 existing private smokehouses were improved. A total of 215 private smokehouses has been put up (completed) to date under the supervision of Rubber Instructors. An external furnace suitable for small smokehouses was designed for smallholders who prefer this type to the cheaper standard internal furnace recommended.

General.—Among the numerous other services rendered to small proprietors by Instructors were the lining of 132 acres of mature Rubber for contour drains, budding of holdings, issue of budded plants from demonstration nurseries, filling of returns, etc.

A pair of Chinese-made rubber rollers was imported from Malaya through the good offices of the Rubber Research Institute of Malaya at an inclusive cost of Rs. 132 which compares very favourably with the cheapest available pair of rollers in Ceylon which cost Rs. 260. They are in use and appear quite satisfactory for rolling under smallholding conditions. Local engineering firms considered it impossible to produce similar rollers locally at anything like the same price.

Two courses of budding instruction were given to smallholders at the Experiment Station, Nivitigalakele.

ESTATE DEPARTMENT

DARTONFIELD ESTATE

Acreage Statement and Census

No. of Field	Date of planting	Acreage	No. of Immature trees	No. of Mature trees	Total	No. of trees per acre
Mature Areas—						
1	1910	29.2.15	22	2,624	2,646	90
2	1913	0.3.36	—	63	63	63
3	1917	24.0.04	—	2,280	2,280	95
4	1911	1.1.03	—	170	170	136
6	1913	58.2.10	—	5,319	5,319	91
	Total	114.1.28	22	10,456	10,478	92
Replanted Areas						
1	1934	7.3.07	62	766	828	107
2	1938	12.2.10	1,395	—	1,395	111
2a	1938	6.2.35	800	—	800	123
3	1936	9.1.10	1,223	—	1,223	132
4	1939	2.0.00	222	—	222	111
5	1941	6.2.00	690	—	690	106
	Total	44.3.22	4,392	766	5,158	115
Total Rubber		159.1.10	4,414	11,222	15,636	98
Buildings & roads		14.3.08				
Scrub etc.		2.2.19				
Grand Total		176.2.37				

Rainfall.—212.15 inches.

Rainfall was far above average and was very unfavourable for crop intake. Details of rainfall during 1941 and the preceding year appear overleaf :—

	1940	1941
January ...	0.80 ins.	6.98 ins.
February ...	4.23 „	7.27 „
March ...	3.93 „	5.61 „
April ...	13.86 „	11.85 „
May ...	25.30 „	41.91 „
June ...	16.34 „	14.89 „
July ...	7.94 „	13.35 „
August ...	11.20 „	22.13 „
September ...	9.26 „	26.32 „
October	28.95 „	24.81 „
November ...	23.61 „	26.58 „
December ...	5.97 „	10.45 „
Total	151.39 ins.	212.15 ins.

Average Rainfall 1936—1941=173.24 ins.

Crop.—Crop for the year amounted to 60,649 lbs. against an estimate of 65,500 lbs. The shortage is mainly due to unfavourable weather conditions.

Yield records for individual fields are as follows:—

Field No.	Date of planting	Total crop lbs.	Acreage tapped	Yield per acre lbs.
1	1910	13,607	28½	477.4
2	1913	719	1	719.0
3	1917	13,774	24	573.9
4	1911	1,057	1½	704.7
5	1934	2,328	7½	310.4
6	1913	29,164	58½	498.5
	Total	60,649	121	501.2

Percentage of estimate harvested — 92.6

Tapping.—Tapping remained on the double-four system. Bark consumption averaged 3¼" on each cut.

Tapping in the experimental areas was under the supervision of the Estate Superintendent as in former years.

Manufacture.—

Grades	lbs.	Per cent	Total
Smoked Sheet No. 1	4,466	7.36	7.71
Smoked Sheet No. 2	214	.35	
Latex Crepe No. 1	7,190	11.86	15.91
Latex Crepe No. 2	1,693	2.79	
Latex Crepe No. 3	763	1.26	
Scrap Crepe No. 1	4,670	7.70	14.24
Scrap Crepe No. 2	2,865	4.72	
Scrap Crepe No. 3	1,102	1.82	
Latex	37,096	61.17	61.17
Crumb rubber	590	.97	.97

Latex bought from outside estates 51,884 lbs.

Machinery.—Machinery and electrical equipment were inspected in March by Messrs. H. W. Hammond & Co., Consulting Engineers who reported satisfactorily on their condition.

The 52 h.p. Ruston Hornsby engine was given a complete overhaul in the latter part of the year.

A new 20 h.p. Gardner Engine has been purchased to replace the 9 h.p. Lister Engine, and will be installed early next year.

Pests and Diseases.

Oidium Leaf Disease.—The weather conditions were unfavourable for Oidium attack and only a few late wintering trees were affected. No sulphur dusting was done.

Phytophthora Diseases.—A sharp attack of leaf and pod disease occurred early in July, but was checked by a spell of fine weather before serious defoliation occurred. Canker caused more trouble than usual and there were a number of cases of bark rot in the latter part of the year.

Root Diseases.—3 cases of *Fomes lignosus*, 11 cases of Brown root and 4 cases of Ustulina were detected in the mature area, and the usual methods of control were adopted.

Fifty-six trees were blown down during monsoon storms.

Manuring.—A fertiliser mixture consisting of 15½ parts nitrate of soda, 6 parts of bone meal and 1 part muriate of potash was broadcast over an area of 46 acres (in Nos. 2, 3, 4, 6 and parts of No. 1 and 6 fields) (3rd cycle) in wide strips between the rows of trees at the rate of 225 lbs. per acre.

A second application at the same rate was due in the latter part of the year, but nitrate of soda was not then available and it was not considered worth while forking in a half-dose of an organic mixture.

Weeding.—The control of natural covers and selective weeding was carried out as in former years.

The cover of Pueraria has deteriorated considerably in most parts of the estate.

Labour.—The labour force of Tamils was adequate for normal estate requirements. Five Sinhalese families, mostly tappers, are now resident on the estate and have settled down satisfactorily.

The health of the labourers has been good except for a few cases of influenza at the end of the year.

Monthly Total of Labour on Check-roll.

	Tamils	Sinhalese	Total
January ...	29	45	74
February ...	31	41	72
March ...	29	53	82
April ...	31	61	92
May ...	31	67	98
June ...	34	45	79
July ...	34	48	82
August ...	36	56	92
September ...	35	58	93
October ...	35	58	93
November ...	34	75	109
December ...	34	69	103

Figures for daily out-turn and daily rate of pay are as follows:—

Average daily out-turn ... 55

Average wages per day ... 57.58 cents.

Replanted Areas.—The usual routine supervision was carried out in accordance with the instructions of technical officers.

An area of 6½ acres was replanted with budded stumps in May, according to experimental requirements. Many of the plants received a a severe set-back owing to the young shoots being attacked by Phytophthora, but they recovered well in the latter part of the year.

Buildings.—A double-cottage was constructed for use as labourers' quarters. Each quarter consists of living room, kitchen and verandah.

A dhoby-house was also constructed.

Estate and headquarters buildings were maintained in good order.

Approach Road.—The approach road to the estate has been taken over by the District Road Committee and metalling of the road is in progress. It will be tarred later.

Nivitigalakele

Acreage Statement.—

Vivitigalakele Division.

1926 clearing ...	...	12½ acres
1927 „ ...	...	16½ „
1928 „ ...	...	31 „
1940 Replanting ...	...	3 „
Nurseries, buildings, gardens, etc. ...	...	6½ „
Total ...		69½ acres

Pinnagoda Division.

1935 clearing		28½ acres
1939 ,,	... ...	9½ ,,
1940 ,,	... ...	10 ,,
1941 ,,	... ...	14 ,,
Budwood Multiplication Nursery	...	6½ ,,
1935 Seedling Nursery	... ...	1 acre
1936 Seedling Nursery	... ...	2 acres
Food crops	... ...	3 ,,
Uncultivated	... ...	25½ ,,
Total	...	100 acres

Rainfall.—197.51 inches.

Crop.—The crop harvested for the year amounted to 25,651 lbs. 72 per cent of the crop was derived from areas in commercial tapping, the remainder from areas in test-tapping. The following is a summary of yield records for each field :—

Clearing	Acreage in tapping	Crop lbs.	Yield per acre lbs.
1926 clearing ...	12½	5,822	465.8
1927 ,, ...	16¼	7,282	448.1
1928 ,, ...	31	10,340	333.5
1935 ,, ...	3	2,207	251.3
Total ...	62¾	25,651	408.8

Tapping.—Details of the number of trees in tapping, etc. are given below :—

Clearing	Test-tapping	Commercial tapping	Immature and/or not in tapping	Total
1926 ...	184	1,099	25	1,308
1927 ...	73	1,488	41	1,602
1928 ...	740	1,737	122	2,599
	997	4,324	188	5,509
Part of Pinnagoda 1935 clearing ...	976	—	—	976
Total ...	1,973	4,324	188	6,485

Manufacture.—Crop from commercially tapped areas was manufactured in the form of smoked sheet. Test-tapping samples were milled

at Dartonfield and sold as scrap crepe. The distribution of grades is as follows :—

Grades		lbs.	Per cent	Total
Smoked Sheet No. 1	...	15,533	60.56	62.58
Smoked Sheet No. 2	...	519	2.02	
Scrap Crepe No. 1 (mainly test-tapping samples)	...	9,324	36.35	37.42
Scrap Crepe No. 2 do	...	275	1.07	

Pests and Diseases.—The weather conditions were unfavourable for Oidium attack and no sulphur dusting was carried out, except for a few trees used for hand pollination work.

During the heavy gales 136 trees were damaged and treated.

Many cases of bark rot occurred owing to the very wet weather and routine treatment was given.

Manuring.—30 acres, *i.e.*, approximately half of the mature area were treated with the following mixture by envelope forking in August :—

188 parts Nitrate of soda.
429 „ Groundnut cake.
68 „ Saphos phosphate.
20 „ Muriate of potash

705 parts.

Cover Crops.—Cuttings of *Desmodium ovalifolium* were supplied where vacancies occurred in the mature area. The beds were manured with the following fertiliser mixture at the rate of 4 ozs. per bed :—

3 parts bone meal.
2 „ saphos phosphate
1 part nitrate of potash
1 „ nitrate of soda.

7 parts.

Buildings.—A manure shed was constructed on the Pinnagoda Division. The tool store at Nivitigalakele was reconditioned and extended. Construction of quarters for the chief budder was in progress at the end of the year A concrete water tank of 1,000 gallons' capacity was erected at the curing shed to replace the existing iron tank.

Immature Areas.—Part of the 1935 clearing allocated for a trial of compost manuring was manured twice during the year according to experimental requirements. Routine manuring was undertaken in the remainder of the clearing.

Two applications of manure were made in the 1939 and 1940 clearings.

Growth in the clearings was satisfactory except in the 1939 area which is still backward.

New Clearing 1941—14 Acres.

The area was cleared on the "no burn" system and divided into two blocks.

Block No. 1 (8 acres) was utilised for planting out hand pollinated seedlings and derived clones. Part of this area was opened with continuous platforms and the remainder with individual semi-circular platforms.

Block No. 2 (6 acres) was allocated for a trial of different planting distances and densities. Holing was undertaken on the contour according to experimental requirements, and the area was planted with seed at stake

Nurseries.—

Multiplication Nurseries.—Manuring and pruning were undertaken according to programme.

Plots of five imported clones were established during the year.

Seedling Nurseries.—Normal upkeep and manuring were undertaken in the nurseries planted in 1940 and 1941.

An area of three acres which had proved unsuccessful for food crop cultivation was laid out as a seedling nursery. A dressing of a general manure mixture was given prior to planting.

Sale of Budwood and Budded Stumps, Etc.— Despatches of budwood and budded stumps during the year were as follows :—

Budwood issued to smallholders	...	1,551 yards
Budwood issued to Government	...	200 ..
Budwood issued to estates	...	315 ..
Budwood issued to Smallholdings Dept.	...	81 ..
Budded stumps issued to smallholders	...	3,450
Budded stumps issued to estates	...	12
Budded stumps issued to Smallholdings Dept.		60
Budded stumps issued to Clone Museum, Keptigalla		967

Budding results for the season are as follows :—

	No. budded	No. successful	Percentage successful
January ...	—	—	—
February ...	—	—	—
March ...	—	—	—
April ...	—	—	—
May ...	5,519	3,676	67
June ...	925	703	76
July ...	97	70	72
August ...	157	151	96
September ...	520	422	81
October ...	1,541	1,409	91
November ...	841	750	89
December ...	230	206	90
Total ...	9,830	7,387	75

Wagolla

Routine visits were paid by the Nivitigalakele Conductor and inspections were made by the Superintendent in May and November.

Crop amounted to 2,352 lbs. which corresponds to a yield of approximately 13 lbs. per tree.

ADVISORY SERVICES ETC.

During the absence of the Botanist and Mycologist on leave advisory correspondence on botanical subjects was undertaken by the Director with the assistance of the Geneticist and Assistant Botanist. Mycological specimens which could not readily be identified by the Assistant Botanist were forwarded to the acting Plant Pathologist (Mr. L. S. Bertus) of the Department of Agriculture for report. The opportunity is taken to thank this officer for his helpful co-operation.

The subjects of main interest on the botanical side were choice of planting material, and tapping. The increased number of enquiries on diseases caused by Phytophthora (mainly bark rot and die-back of young plants) is a reflection of the exceptionally wet weather conditions. Fewer root disease specimens were received than in recent years. Enquiries received by the Soils Department were mainly concerned with general manuring problems, or to manuring in relation to wartime conditions.

Most of the enquiries handled by the Chemical Department were concerned with the wartime shortage of materials and with problems connected with the handling of increased crops. A number of mid-country Rubber areas were brought into tapping during 1941 for the first time in many years, and a considerable number of enquiries were received about smokehouses and the design of small sheet factories.

An analysis of enquiries is given below:—

Chemical Department	...	220
Botanical and Mycological Department	...	159
Soils Department	...	253

Advisory visits, which were unavoidably reduced to a minimum, were made as follows:—

Chemical Department	...	10
Botanical and Mycological Department	...	16
Soils Department	...	3

MEETINGS, COMMITTEES ETC.

The Director attended meetings of the Rubber Research Board by invitation, and served on the Experimental Committee and Smallholdings Committee.

The Director is an ex-officio member of the Central Board of Agriculture.

The Director attended the Annual General Meetings of the Planters Association of Ceylon, the Low-Country Products Association, and the Ceylon Estates Proprietary Association. He also attended general meetings of the Kalutara Planters' Association and one general meeting of the Southern Province Planters' Association. At the latter an address was given entitled "Wartime Problems of the Rubber Industry."

CO-OPERATION WITH OTHER RESEARCH ASSOCIATIONS

Arrangements were made for attendance at a meeting of Directors of Rubber Research organisations which was to have been held in Buitenzorg, Java, in the latter part of the year. The meeting had been postponed until early 1942, before the war clouds became threatening in the East, and it is a sad thought that it may now be years before these fruitful meetings can be resumed. At the time of writing Malaya, Sumatra and Jave have all been despoiled by the enemy, and it is desired to place on record the deepest sympathy of the Research Scheme for the staffs of the sister Institutes in these countries, both in their personal trials and in the loss of so much valuable experimental material. We are glad to have been of some assistance to the families of officers of the R.R.I.M. when passing through Colombo, and to have welcomed several of the officers themselves after adventurous journeys from Malaya. It is recognised that special significance is now attached to research work on Rubber in Ceylon, and that the continuity of long term field trials, in particular, must be maintained in spite of the greatly reduced technical staff.

During the greater part of the year the usual close co-operation was maintainted with the R.R.I.M. by the exchange of reports and by correspondence. Cordial co-operation was also maintained with the Proefstation West Java and the Proefstation der A.V.R.O.S. Reports were exchanged with the British Rubber Producers' Research Association and the Rubber Growers' Association. Co-operation was maintained with the Tea Research Institute of Ceylon and the Coconut Research Scheme on subjects of common interest.

PUBLICATIONS

Publications of the Research Scheme are issued without charge to the Proprietors (resident in Ceylon), Superintendents and Local Agents of Rubber estates over 10 acres in extent, who apply for registration. Extra copies are supplied for the use of Assistants on large estates. Particulars of issues of publications are given below:—

		1941	1940
Estates and Agencies	...	816	761
Subscribers	..	52	47
Exchange List	...	56	54

Publications issued during the year were as follows :—

Report of the Work of the Rubber Research Board in 1940.

1st and 2nd Quarterly Circulars, 1941—

Field Experiments on Dartonfield Estate—XIV. Manuring Experiments with Mature Rubber (1940). By L. A. Whelan and C. A. de Silva.

Ceylon Clones—IX (1940). By C. E. Ford.

Rubber Branch Pruning. By J. D. Farquharson.

Budded Rubber in Commercial Tapping. By Dias, Peiris & Co.

Planting Note—Application of Tar to Young Budded Trees. By T. E. H. O'Brien.

3rd Quarterly Circular, 1941—

Field Experiments on Dartonfield Estate—XV. Comparison of Tapping Systems (1940). By C. A. de Silva.

The Performance of Imported Clones in Ceylon—V. By C. E. Ford.

Some Wartime Problems of the Rubber Industry. By T. E. H. O'Brien.

Planting Note—Test for Acetic Acid Dilution. By M. W. Philpott.

4th Quarterly Circular, 1941—

Wind Damage in Immature Rubber. By C. E. Ford.

Field Experiments on Dartonfield Estate—XVI. Measurements of Growth in Replanted Areas (1940). By L. A. Whelan and C. A. de Silva.

Selected Natural Covers in Young Budded Rubber. By G. Huntley.

Suggestions for the taking of a Census in Replanted or New Planted Areas. By E. W. Whitelaw.

Planting Note—Removal of Unproductive Trees. By T. E. H. O'Brien.

Advisory Circular No. 2 (Revised)—Programme of Manuring for Replanted Rubber Clearings.

Advisory Circular No. 15—Cultivation of Food Crops in Young Rubber Areas.

(Sgd.) T. E. H. O'BRIEN,
Director.

Research Laboratories,
Dartonfield,
Agalawatta.
12th March, 1942.

ACTING AUDITOR-GENERAL'S REPORT FOR 1941

Audit Office,
Wellawatta, 6th June, 1942.

Report of the Acting Auditor-General on the Accounts of the Rubber Research Scheme (Ceylon) for the year ended December 31, 1941.

The accounts of the Rubber Research Scheme (Ceylon) for the year ended December 31, 1941, have been duly audited and found correct. The financial statements, viz. (a) Dartonfield Estate Working Account, (b) Nivitigalakele Experiment Station Working Account (c) Revenue Account (d) Capital Account and General Balance Sheet and (e) the Provident Fund Working Account were compared with the books and accounts and found to agree. They are returned herewith duly certified.

I. INCOME

2. The total income for the year amounted to Rs. 297,729. It exceeded the estimate by Rs. 52,735 and the income for the previous year by Rs. 3,227.

3. The following is a comparison between the estimate and the actual income under the different accounts :—

Account	Estimated Rs.	Actual Rs.	Excess Rs.
1. Cess Collections	213,640	249,835	36,195
2. Interest	6,500	8,769	2,269
3. Sale of Publications	800	1,005	205
4. Profit from Dartonfield Estate	15,530	29,200	13,670
5. Profit from Nivitigalakele	7,124	7,164	40
6. Sundry Receipts	1,400	1,756	356
	244,994	297,729	52,735

4. The reasons for the variations between the estimate and the actual income are as follows :—

1. Larger export quota.
2. Larger investments in long term securities.
3. Under-estimate.
4. Realisation of higher prices for rubber and increased production of preserved latex.
5. Casual.
6. Under-estimate.

5. **Profit from Dartonfield Estate.**—The profit for the year under review was Rs. 29,200 It exceeded the profit for the previous year by Rs. 2,644.

6. **Profit from Nivitigalakele Experiment Station.**—The working of the Experiment Station for the year showed a profit of Rs. 7,164 as compared with the profit of Rs. 10,911 earned during the previous year.

II EXPENDITURE

7. **Revenue Expenditure.**—The total expenditure on Revenue Account exclusive of the amounts allowed for depreciation of fixed assets, the Passage and Audit Fee Reserves amounted to Rs. 193,757 as compared with Rs. 179,368 for the previous year. The details of this expenditure are fully set forth in the Income and Expenditure Account. The whole of this expenditure was checked with supporting vouchers and accounts.

8. **Capital Account.**—The expenditure incurred on fixed capital assets during the year amounted to Rs. 28,073 as compared with Rs. 11,261 in the previous year. Details of the expenditure are shown in the Capital Account.

9. A comparison between the original estimate and the expenditure incurred in respect of the year under review is shown in statement 'A' attached. The reasons for the major variations between the estimate and the actual expenditure, as furnished by the Director of Research, are shown against the respective items in the statement.

The excesses under the different items of expenditure have not yet been sanctioned by the Board.

III. CAPITAL ACCOUNT

10. The cost of fixed assets at December 31, 1940, stood at Rs. 702,511. The expenditure incurred during the year on Capital Account amounted to Rs. 28,073 and the value of fixed assets at December 31 1941 was therefore Rs. 730,584. The details of this amount are fully set forth in the Capital Account.

IV BALANCE SHEET

(a) Liabilities

11. **Creditors — Rs. 19,970.**—Of this amount a sum of Rs. 19,415 represents the total amount due to creditors for goods purchased or services rendered in respect of the year and Rs. 555 being subscriptions for 1942 publications received in advance.

12. **Passage Fund Reserve — Rs. 2,565.**—The balance on December 31, 1940 was Rs. 3,375 and a sum of Rs. 5,000 was transferred to this fund during the year. An expenditure of Rs. 5,810 being cost of passages provided during the year for some members of the Senior Staff was met from this fund, leaving a balance of Rs. 2,565 on December 31, 1941.

13. **Depreciation Reserve — Rs. 125,436.**—This sum represents the amount set apart for the depreciation of the fixed assets of the Scheme.

The amount transferred from revenue to this account during the year was Rs. 18,809.45 made up as follows:

			Rs. cts
Dartonfield :—			
Buildings @ 3½% on Rs. 184,741.97		...	6,465.97
Furniture, Fittings and Office Equipment @ 7½% on Rs. 23,528.96		...	1,764.67
Water and Power Supply @ 7½% on Rs. 27,493.53			2,062.01
Machinery and Tools @ 7½% on Rs. 62,807.42		...	4,710.56
Accumulators @ 20% on Rs. 6,414.50		...	1,282.90
Nivitigalakele :—			
Buildings @ 3½%			
Balance on 31-12-1940	Rs. 32,559.99		
Less value of furniture transferred in 1937 but not taken off from this head	,, 583.00		
	Rs. 31,976.99		
Depreciation for 1941	Rs. 1,119.19		
Less depreciation written off on Rs. 583 from 1937-40	,, 82.67		1,036.52
Furniture, Fittings and Office Equipment @ 7½% on Rs. 3,080.52			231.04
Water and Power Supply @ 7½% on Rs. 4,481.43			336.11
Machinery and Tools at 7½% on Rs. 77.24			5.79
Laboratory Apparatus at 7½% on Rs. 12,185.06			913.88
			18,809.45

14 **Provident Fund Reserve — Rs. 95,392.**—The particulars of the receipts and payments on this account are shown in the Provident Fund Account attached to this report. The balance standing to the credit of this Fund at the beginning of the year was Rs. 58,326. On representations made by the Director to the Board of Management, it was resolved to revert to the old system of administering the Provident Fund under the control of the Board of Management instead of the Board of Trustees referred to in paragraph 29 of the last year's report. In accordance with this decision a sum of Rs. 13,560 was transferred to this Fund from the Board of Trustees Account. The contributions by the Staff during the year amounted to Rs. 9,270 and those made from the funds of the Scheme were Rs. 16,510. Of the amount contributed by the Scheme, a sum of Rs. 4,014 represents the Reserve for bonus contribution referred to in paragaph 18 of the last year's report and the balance being the bonus and interest in respect of the year under review. During the year a sum of Rs. 2,274 was refunded to retiring officers of the Scheme.

15. **Audit Fee Reserve — Rs. 398.**—The amount to the credit of this account at the beginning of the year was Rs. 611 which together with Rs. 600 voted for the year was utilised towards meeting Rs. 813 the cost of audit charged in respect of the year 1940. The balance left over at the end of the year was Rs. 398.

16. **Surplus Account — Rs. 266,495.**—The surplus at the beginning of the year was Rs. 215,006. The excess of income over expenditure for the year was Rs. 79,563 and the nett Capital Expenditure was Rs. 28,074. There was therefore a surplus for the year amounting to Rs. 51,489 which increased the total surplus at the end of the year to Rs. 266,495.

(b) Assets

17. **Debtors — Rs. 53,270.**—Of this amount sums of Rs. 23,618 and Rs. 2,392 represent the amounts due from the Deputy Financial Secretary on account of cess collections made during December and November, 1941 respectively and which were received from him in January, 1942. The balance Rs. 27,260 was due from various parties in respect of produce, etc. sold and labour lent.

18. **Advance Accounts — Rs. 4,025.**—Of this amount the sum of Rs. 3,685 represents the balance outstanding from the imprests advanced to the London Advisory Committee. The advances to the Superintendent of Dartonfield, Nivitigalakele and Wagolla Estates and the Smallholdings Propaganda Officer were for sundry expenses. The amount shown against the Postmaster-General represents the sum deposited with him in respect of trunk call and other telephone fees.

19. **Accrued Interest on Investments — Rs. 2,351.**—This sum represents the amount of interest accrued for the year on the investments of the cash balances but not received during the year.

20. **Payments in Advance — Rs. 1,466.**—This sum represents the money paid during 1941 for expenditure incurred on the extension of the Engine Driver's quarters and workshop at Dartonfield and on the 1942 new clearing account of Nivitigalakele, Chief Budder's quarters and labourers' cottages.

21. **Estate Stocks — Rs. 5,969.**—This amount is made up of Rs. 2,559 being the value of Dartonfield stores, Rs. 1,161 being the value of the balance rice in hand, Rs. 842 being value of stores on account of latex export and Rs. 1,407 being value of latex in stock on December 31, 1941.

22. **Loans to Officers — Rs. 772.**—This sum represents the balance outstanding out of the loans granted to two members of the staff for purchase of transport. The loans are being repaid in instalments with interest.

23. **Investments in Ceylon Government Loans — Rs. 215,000.**—The stock certificates relating to the Rs. 25,000 3½% loan 1957-62, the Rs. 110,000 3¼% loan 1949-51, the Rs. 40,000 3% War Loan 1956-60 and the Rs. 40,000 2½% War Loan 1948 were all inspected. These sums as appearing in the Balance Sheet represent the face value of the respective loans but the

prices at which they were quoted in the market at December 31, 1941, were Rs. 101½, Rs. 101⅞ and at par respectively. At the rates quoted the value of the investments on December 31, 1941 would be Rs. 25,375, Rs. 112,062.50, Rs. 40,000 and Rs. 40,000 respectively.

24. **Cash Balances — Rs. 227,404.**—The receipts in support of the fixed deposits in banks amounting to Rs. 160,000 were inspected and the sums of Rs. 10,108 and Rs. 6,332 lying in deposit at the Bank of Ceylon and at the Ceylon Savings Bank were verified by reference to the connected pass books. The balances in current account with the National Bank of India Ltd., were verified by reference to the bank certificates. The balance of cash in hand at December 31, 1941, was not verified but a surprise verification of the cash in hand was made on April 27, 1942.

V. GENERAL

The accounts were received monthly and audited in this office. The office of the Scheme at Dartonfield Estate was visited once in respect of the accounts for the year under review and the books and accounts kept were checked and the cash in hand verified.

(Sgd.) K. KANAGARATNAM,
Acting Auditor-General

ESTIMATES FOR 1942

(Adopted by the Board, October 27th, 1941)

REVENUE

		Rs.
1.	Cess Collections	306,600
2.	Interest	9,800
3.	Sale of Publications	1,000
4.	Profit from Dartonfield	27,380
5.	Profit from Nivitigalakele	7,704
6.	Sundry Receipts	1,400
		Rs. 353,884

REVENUE EXPENDITURE

		Rs.	Rs.
1.	**Administration of the Board:**		
	Travelling Expenses of Members ...		2,250
2.	**Personal Emoluments:**		
	Senior Scientific Staff	79,425	
	Junior Scientific Staff	7,607	87,032
3.	**Library and Publications:**		
	Library	1,250	
	Publications	2,250	3,500
4.	**Smallholdings Work:**		
	Salaries and Allowances	19,539	
	Travelling and General Expenses ...	13,455	32,994
5.	**Laboratory:**		
	Equipment and Working Expenses ...	6,000	
	Furniture Replacements	50	6,050
6.	**Field and Factory Experiments:**		
	Field Experiments	8,341	
	Factory Experiments	2,972	
	Budding Instruction	100	11,413
7	**Office:**		
	Salaries of Office Staff	9,136	
	Stationery and Office Equipment ...	2,750	
	Postages and Telegrams	2,000	
	Advertising	200	
	Telephone	1,000	
	Audit	850	15,936
8.	**Travelling Expenses of Staff:**		
	Officer's Expense		5,000
9.	**Maintenance of Buildings, Water and Power Supply:**		
	Laboratories and Offices	250	
	Bungalows	1,000	
	Water and Power Supply	750	2,000
10.	**Miscellaneous Items Shared with Estate:**		
	Dartonfield General Charges	5,523	
	Nivitigalakele General Charges ...	1,885	
	Upkeep of Roads and Grounds ...	570	
	Factory Upkeep	687	
	Power Supply	3,483	12,148
		Carried over	178,323

		Rs.	Rs.
	Brought forward		178,323
11.	**Contingencies:**		
	Contribution to London Advisory Committee	12,000	
	General Charges	750	
	Insurance Charges	1,750	
	Staff Provident Fund	14,300	
	Passages	10,000	
	Entertainment Allowance	300	39,100
12.	**Depreciation:**		18,300
		Rs.	235,723

CAPITAL EXPENDITURE

		Rs.	Rs.
Buildings:			
	Workshop	900	
	Manure Shed	551	
	Improvement of Engine Driver's quarters	675	
	Bungalow for Chief Budder	2,500	4,626
Equipment:			
	Extension to Library Book Cases ...	1,162	
	Rack for Record Room	230	
	Almirah for Botanical Department ...	95	
	Tappal Bicycle for Smallholdings Dept. ...	125	1,612
Immature Areas:			
	Dartonfield	1,749	
	Nivitigalakelle	4,577	
	Siriwardenakanda (Token Vote) ...	100	6,426
		Rs.	12,664

SUMMARY

		Rs.	Rs.
Income			353,884
Expenditure:			
	Revenue	235,723	
	Capital	12,664	248,387
Excess of Income over Expenditure		Rs.	105,497

RUBBER RESEARCH SCHEME (CEYLON)

Dartonfield Estate

Working Account for the year ended 31st December, 1941

Dr. Cr.

	Rs. cts.	Rs. cts.		Rs. cts.
To Expenditure :—			By Sales :—	
General Charges ...	5,366 34			
Upkeep ...	1,184 26		Manufactured Rubber (23,553 lbs.) and Coupons	22,962 59
Cultivation ...	1,084 88			
Collection ...	4,201 28			
Manufacture ...	6,463 88		Preserved latex (Estate latex 37,096 lbs. Bought latex 66,284 lbs.)	73,366 27
Distribution ...	2,158 00			
Bought Latex ...	46,670 71	67,129 35		
,, Balance transferred to Revenue Account		29,199 51		
		Rs. 96,328 86		Rs. 96,328 86

Nivitigalakele Experiment Station

Working Account for the year ended 31st December, 1941

Dr. Cr.

	Rs. cts.	Rs. cts.		Rs. cts.
To Expenditure :—			By Sale of Produce :—	
General Charges	2,014 98		Rubber (25,651 lbs.) and Coupons	14,892 53
Upkeep, Cultivation, Manufacture and Distribution	6,386 72	8,401 70	Planting Material	2,989 21
,, Upkeep of Nurseries		1,645 72		
,, Collection and Distribution of budwood and budded stumps ...		670 01		
,, Balance transferred to Revenue Account		7,164 31		
		Rs. 17,881 74		Rs. 17,881 74

RUBBER RESEARCH SCHEME (CEYLON)

Revenue Account for the year ended 31st December, 1941

Dr. Cr.

	Rs. cts.	Rs. cts.
To Personal Emoluments:—		
Senior Scientific Staff	77,807 09	
Junior Scientific Staff	6,828 51	
Office Staff	8,734 37	93,369 97
„ Library & Publications:—		
Library	1 110 93	
Publications	2,336 86	3,447 79
„ Sm llholdings Work:—		
Salaries and Allowances	18,220 15	
Travelling and General Expenses	10,491 36	28,711 51
„ Laboratory:—		
Equipment and Working Expenses	4,518 85	
Furniture Replacements	15 08	4,533 93
„ Field and Factory Experiments:—		
Field Experiments	5,783 56	
Factory Experiments	2,282 40	
Budding Instruction	712 21	8,778 17
„ Office:—		
Stationery and Office Equipment	1.645 02	
Postages and Telegrams	2 334 39	
Advertising	226 93	
Telephones	1,033 42	
Audit	600 00	5,839 76
„ Travelling:—		
Expenses of Board Members	2,081 20	
Expenses of Staff	4.515 43	6,596 63
„ Maintenance of Buildings, Water and Power Supply:—		
Laboratories and Offices	80 42	
Bungalows	1,222 94	
Water and Power Supply	1,983 53	3,286 89
„ Miscellaneous Items Shared with Estates:—		
Dartonfield General Charges	5,366 34	
Nivitigalakele General Charges	2,014 97	
Upkeep of Roads and Grounds	601 83	
Factory Upkeep	1,355 62	
Power Supply	3,311 68	12,650 44
„ Contingencies:—		
Contribution to London Advisory Committee	11,717 63	
General Charges	1.078 67	
Insurances	1,751 68	
Staff Provident Fund	12,496 32	
Contribution to Passage Fund Reserve	5,000 00	
Entertainment Allowance	97 50	32,141 80
„ Depreciation		18,809 45
„ Balance being excess of Income over Expenditure for the year, carried forward to Balance Sheet		79 563 07
	Rs.	297,729 41

	Rs. cts.	Rs. cts.
By Balances of Estate Working Accounts:—		
Dartonfield	29,199 51	
Nivitigalakele	7,164 31	
„ Cess Collections	249,835 43	
„ Interest	8,769 13	
„ Sale of Publications	1,004 73	
„ Sundry Receipts	1,756 20	
		Rs. 297,729 41

RUBBER RESEARCH SCHEME (CEYLON)

Capital Account as at 31st December, 1941

EXPENDITURE	To December 31, 1940 Rs. cts.	Transfers between Accounts Rs. cts.	Additions in 1941 Rs. cts.	Total Rs. cts.
To Land including Development :—				
Dartonfield	110,982 62		8,000 69	118,983 31
Nivitigalakele	120,838 15		5,829 55	126,667 70
,, Buildings and Lines :—				
Dartonfield				
Estate	33,733 83		2,541 40	36,275 23
Headquarters ...	183,090 09		7,490 41	190,580 50
Nivitigalakele :—				
Estate	14,668 78		1,047 42	15,716 20
Headquarters ...	21,903 65		—	21,903 65
,, Furniture and Fixed Equipment :—				
Dartonfield	34,146 32		697 65	34,843 97
Nivitigalakele	4,660 85		—	4,660 85
,, Power and Water Supply :—				
Dartonfield	36,121 65		337 48	36,459 13
Nivitigalakele	5,287 58		675 47	5,963 05
,, Machinery and Tools :—				
Dartonfield	97,045 90		708 27	97,754 17
Nivitigalakele	105 50		153 79	259 29
,, Laboratory Apparatus ...	28,592 46		591 33	29,183 79
,, London Plant	11,333 34		—	11,333 34
	Rs. 702,510 72		28,073 46	730,584 18

RECEIPTS

	Rs. cts.
By Revenue applied for Capital purposes at December 31,1940	702,510 72
In 1941	28,073 46
	Rs. 730,584 18

GENERAL BALANCE SHEET AS AT 31st DECEMBER, 1941

LIABILITIES

	Rs. cts.	Rs. cts.
Creditors :—		
Sundries	19,415 44	
Subscriptions for 1942 publications received in advance ...	555 00	19,970 44
Passage Fund Reserve :—		
At December 31, 1940	3,375 12	
Add Reserve for 1941	5,000 00	
	8,375 12	
Less Payments	5,810 37	2,564 75
Depreciation Reserve :—		
At December 31, 1940	106,626 76	
Add Reserve for 1941	18,809 45	125,436 21
Provident Fund Reserve :—		
At December 31, 1940	62,339 88	
Additions during 1941	35,326 31	
	97,666 19	
Less Payments in 1941	2,273 90	95,392 29
Audit Fee Reserve :—		
At December 31, 1940	610 81	
Add Reserve for 1941	600 00	
	1,210 81	
Less Payments in 1941	812 35	398 46
Surplus Account :—		
At December 31, 1940	215,005 59	
Add Excess of Income over Expenditure in 1941 ...	79,563 07	
	294,568 66	
Less Contribution to Capital Outlay in 1941	28,073 46	266,495 20
		Rs. 510,257 35

ASSETS

	Rs. cts.	Rs. cts.
Debtors :—		
Cess Collections for December, 1941	23,617 89	
Arrears of Cess Collections for November, 1941 ...	2,392 60	
Sundries	27,259 72	53,270 21
Advance Accounts :—		
London Advisory Committee	3,684 98	
Estate Superintendent :—		
Dartonfield	109 30	
Nivitigalakele	38 57	
Wagolla	11 28	
Smallholdings Propaganda Officer	70 99	
Postmaster-General	110 00	4,025 12
Accrued interest on investments		2,350 95
Payments in advance		1,466 02
Estate Stocks		5,968 83
Loans to Officers		772 07
Investments :—		
In Ceylon Govt. 3½% Loan 1957/62	25,000 00	
,, ,, 3½% ,, 1949/51	110,000 00	
,, ,, 3% War Loan 1956/1960	40,000 00	
,, ,, 2½% ,, ,, 1948	40,000 00	215,000 00
Cash Balances :—		
On Fixed Deposit	160,000 00	
On Savings Deposit (Bank of Ceylon)	10,108 06	
At Ceylon Savings Bank	6,331 58	
In Current Account No. 1	47,817 47	
In Current Account No. 2	2,912 62	
In hand	234 42	227,404 15
		Rs. 510,257 35

I certify that the above Balance Sheet represents a true and corrcet view of the financial affairs of the Rubber Research Scheme (Ceylon) as shown by the books on December 31, 1941.

Audit Office,
Wellawatte, 6th June, 1942.

(Sgd.) K. KANAGARATNAM,
Acting Auditor-General.

STATEMENT 'A'

ACCOUNT	Estimate	Supplementary Provision & re-votes	Total	Actual Expenditure	Excess	Saving	Causes for Variation
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
1. Administration of the Board:							
Travelling Expenses of Members ...	2,000	—	2,000	2,081	81	—	—
2. A-F. Emoluments of Senior Scientific Staff ...	76,575	—	76,575	77,807	1,232	—	Payment of acting allowances to two officers and to the Govt. Plant Pathologist.
3. A-F. Emoluments of Junior Scientific Staff ...	6,790	—	6,790	6,829	39	—	—
4. Library and Publications:							
A. Library ...	1,500	—	1,500	1,111	—	389	Economy.
B. Publications ...	2,000	—	2,000	2,337	337	—	Publication on Ceylon Clones not estimated for.
5. Smallholdings Work:							
A-B. Salaries and Rent Allowances of Staff ...	18,187	—	18,187	18,220	33	—	—
C-D. Travelling and General Expenses ...	11,933	—	11,933	10,491	—	1,442	Overestimate of Smallholdings Propaganda Officer's travelling requirements and non-payment of competition prizes.
6. Laboratory:							
A. Equipment and Working Expenses ...	5,000	—	5,000	5,167	167	—	Increased cost of materials.
B. Furniture Replacements ...	50	—	50	23	—	27	—
7. Field and Factory Experiments:							
A. Field Experiments ...	5,684	2,309	7,993	5,784	—	2,209	Non-purchase of clonal seeds and larger income from Wagolla.
B. Factory Experiments ...	2,811	—	2,811	2,282	—	529	Lower cost of firewood and economical upkeep of machinery.
C. Budding Instruction ...	913	—	913	712	—	201	Abolition of Post of Budding Instructor.
8. Office:							
A-C. Emoluments of Office Staff...	8,956	—	8,956	8,734	—	222	Changes in Staff.
D. Stationery and Office Equipment ...	2,750	—	2,750	1,716	—	1,034	Economical use of Stationery.
E. Postages and Telegrams ...	2,000	—	2,000	2,334	334	—	Increased issue of Publications.
F. Advertising ...	200	—	200	227	27	—	—
G. Telephone ...	1,000	—	1,000	1,033	33	—	—
H. Audit ...	600	—	600	600	—	—	—
9. Travelling Expenses of Staff:	5,000	—	5,000	4,515	—	485	Less travelling done owing to shortage of staff.
10. Maintenance of Buildings, Water and Power Supply:							
A. Laboratory and Offices ...	250	—	250	80	—	170	Work postponed.
B. Bungalows ...	1,000	—	1,000	1,223	223	—	Increased cost of materials.
C. Water and Power Supply ...	500	—	500	1,984	1,484	—	New lightning arrestors, larger replacements and higher cost of materials.
11. Miscellaneous Items shared with Estates:							
A. Dartonfield General Charges...	5,199	—	5,199	5,366	167	—	War bonus to staff and increase in price of rice.
B. Nivitigalakele General Charges	2,027	—	2,027	2,015	—	12	—
C. Upkeep of Roads and Grounds	574	—	574	602	28	—	—
D. Factory Upkeep ...	487	—	487	1,356	869	—	Unexpected repairs to Ruston and Lister Engines.
E. Power Supply ...	3,169	—	3,169	3,312	143	—	Engine Driver's allowance and higher cost of fuels.
12. Contingencies:							
A. Contribution to London Advisory Committee ...	12,000	—	12,000	11,718	—	282	Difference in exchange.
B. General Charges ...	750	—	750	1,079	329	—	Payment of fees for inspection of Crown land.
C. Insurance Charges ...	1,750	—	1,750	1,752	2	—	—
D. Staff Provident Fund ...	13,055	—	13,055	12,496	—	559	Changes in Staff.
E. Passages ...	5,000	—	5,000	5,000	—	—	—
F. Entertainment Allowance ...	300	—	300	98	—	202	Overestimate.
13. Depreciation:	19,300	—	19,300	18,809	—	491	do
14. Capital Account:							
A. Manure Shed at Pinnagoda ...	516	67	583	614	31	—	—
B. Furniture for Soils Laboratory	111	—	111	106	—	5	—
C. Almirah for Estate Office ...	80	—	80	90	10	—	—
D. Latrine Seats for infants at lines	80	—	80	70	—	10	—
E. Water and Power Scheme (Dartonfield) ...	219	9,153	9,372	226	—	9,146	Work incomplete.
F. Upkeep of Dartonfield Immature Areas ...	1,394	—	1,394	1,650	256	—	Higher cost of manure and weeding.
G. Replanting 6½ acres (Dartonfield) ...	974	—	974	1,140	166	—	Opening up of larger area.
H. Upkeep of Nivitigalakele Immature Areas ...	2,249	—	2,249	2,729	480	—	Deepening of trenches and higher cost of manure.
I. Planting 14 acres (Nivitigalakele) ...	3,017	—	3,017	2,475	—	542	Change in planting system.
J. Planting 3 acres seedling nursery (Nivitigalakele) ...	748	—	748	625	—	123	Watering and shading found unnecessary.
K. Dartonfield Junior Staff Bungalow No. 11 ...	—	4,500	4,500	4,479	—	21	—
L. Dartonfield Ceylonese Labourers' Cottages ...	—	1,652	1,652	1,617	—	35	—
M. Kitchen Hearths for Line Rooms (Dartonfield) ...	—	1,155	1,155	645	—	510	Work incomplete.
N. do (Nivitigalakele) ...	—	225	225	225	—	—	—
O. Water and Power Scheme (Nivitigalakele) ...	—	578	578	675	97	—	—
P. Rubber Rollers for Smallholders ...	—	250	250	154	—	96	—
Q. Extension to Dartonfield Lines	—	827	827	210	—	617	Work incomplete.
R. Dartonfield Approach Road...	—	5,200	5,200	5,200	—	—	—
S. Nivitigalakele Tool Shed ...	—	200	200	209	9	—	—
T. Dartonfield Dhoby House ...	—	2,000	2,000	1,831	—	169	Work incomplete.
U. Latex Equipment ...	—	5,500	5,500	2,368	—	3,132	Payments incomplete and economy.

PROVIDENT FUND

Working Account for the year ended 31st December, 1941.

Dr. **Cr.**

	Rs. Cts.		Rs. Cts.
To Payments to eight retiring officers ...	2,273 90	By Balance brought forward from 1940 ...	58,326 02
Balance carried forward ...	95,392 29	,, Board's Contributions:—	
		Bonus for 1940 Rs. 1,217·54	
		,, ,, 1941 ,, 9,035·10	
		Interest for 1940 ,, 2,613·89	
		,, ,, 1941 ,, 3,504·82	16,371 35
		,, Amount transferred from Board of Trustees Account	13,560 40
		,, Members' contributions during 1941 ...	9,269 59
		,, Bonus and interest for 1941 paid to five retiring officers	138 83
Rs.	97,666 19	Rs.	97,666 19

Audit Office,
Wellawatte, 6th June, 1942.

Audited and found correct:
(Sgd.) K. KANAGARATNAM,
Acting Auditor-General.

PRINTERS:
H. W. CAVE & CO.,
COLOMBO.